

Work Order ID 70667

Monday, June 13, 2011 10:10:03 AM

Page 1

Item ID: D2741

Accept

Revision ID:

Item Name: Blade, 350 Skidtube

Start Date: 6/13/2011 Start Qty: 40.00

Required Date: 6/30/2011 Req'd Qty: 40.00

Reference:

Approvals:

Process Plan: CL

Date: 11/06/13

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D2741

Rev C

100-

0.00



BAND SAW

Bandsaw

Memo

0.00

Jeaspa Bandsaw

Cut blanks 13.850" long +0.063" -0.000"

11/07/10

38

110

0.00



HAAS CNC VERTICAL MACHINING #1

HAAS 1

Memo

0.00

HAAS CNC vertical machine #1

1-Machine per folio FA108

11/07/20

38

120

0.00



QC2- Inspect parts off machine FAI/FAIB

QC

Memo

0.00

Quality Control

11/07/20

38

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 70667

Monday, June 13, 2011 10:10:03 AM



Item ID: D2741	Accept		Setup Start	
Revision ID:			Stop	
Item Name: Blade, 350 Skidtube				
Start Date: 6/13/2011	Start Qty: 40.00		Cust Item ID:	
Required Date: 6/30/2011	Req'd Qty: 40.00		Customer:	
Reference:				

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run Start	
	QC:	Date:	SPC (Y/N):	Date:	Stop	

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 QC Quality Control	QC8- Inspect parts - second check Memo	0.00 0.00		417/22		38	0		
140 Small Fab Small Fab	Small Fab Memo 1-Deburr 2-Bend per Dwg D2741	0.00 0.00		SB 11604/28		38			
150 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00				W	11	07 28	38 40

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 70667



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Monday, June 13, 2011 10:10:03 AM

Item ID: D2741

Accept



Setup Start



Revision ID:

Stop



Item Name: Blade, 350 Skidtube

Start Date: 6/13/2011 Start Qty: 40.00



Cust Item ID:

Required Date: 6/30/2011 Req'd Qty: 40.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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160

Outsource process - Heat Treat

0.00



Outsource1

Memo

0.00

Outsource process - Heat Treat

Issue P/O: 14596 ☐ Harden material as per Dwg D2741 ☐ Min. Ultimate Tensile Strength = 152 ksi (34-40 HRC) ☐ Min. Yield Tensile Strength = 141 ksi ☐ Test report or Certification required

11-07-29

38

170

Receive & Inspect for Damage & Mat'l Certs

0.00



Packaging

Memo

0.00

Packaging

Ensure Test report or Certification attached

11/08/23 38

180

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

5/10/24

counts
438

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 70667

Monday, June 13, 2011 10:10:03 AM



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Item ID: D2741

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Setup Start



Revision ID:

Item Name: Blade, 350 Skidtube

Stop



Start Date: 6/13/2011 Start Qty: 40.00



Cust Item ID:

Required Date: 6/30/2011 Req'd Qty: 40.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center-ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

190

0.00



Small Fab

Small Fab

Memo

0.00

Small Fab

1-Pass in deburring machine 2-Grind off edges

1311-9-12

195

0.00



HandFinish

Memo

0.00

Hand Finishing

clean with wash & wipe to remove oil

38xØ m/11/04/12

200

White Gloss(Ref:4.3.5.2) per QSI005 4.3-Steel

0.00



Powdercoat

Memo

0.00

Powder Coating

START TIME:

FINISH TIME:

OVEN TEMPERATURE:

2:45

3:15

38xØ m/11/04/12

M117745 4000

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Start Date: 6/13/2011 Start Qty: 40.00



Cust Item ID:

Required Date: 6/30/2011 Req'd Qty: 40.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

38

BT 11-9-12.

220

Identify as per dwg & Stock Location: ST 460 0.00



Packaging

Memo

0.00

Packaging

L (38x) SP 11-09-13-CE

230

QC21- Final Inspection - Work Order Release 0.00



QC

Memo

0.00

Quality Control

11/9/14

ME 11-09-13

Picklist Print

Monday, June 13, 2011 10:10:00 AM

Page 1

Work Order ID: 70667



Parent Item: D2741



Parent Item Name: Blade, 350 Skidtube

Start Date: 6/13/2011

Required Date: 6/30/2011

Start Qty: 40.00

Required Qty: 40.00

Comments: IPP Rev: D 00.11.15 Removed P/O turning - in house process EC
IPP Rev: E 06-03-20 As Per Rev C JLM
IPP Rev: F 06.04.20 Added grinding after heat treating EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M4130NB0.500X03.00 0		Purchased	No			100	f	47.2500	1.1541	48.59368			



4130 Bar 0.500 x 3.00



Location

Loc Qty

Loc Code

MAT034

47.25

117835

47.25

47.25 on 11/07/04

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

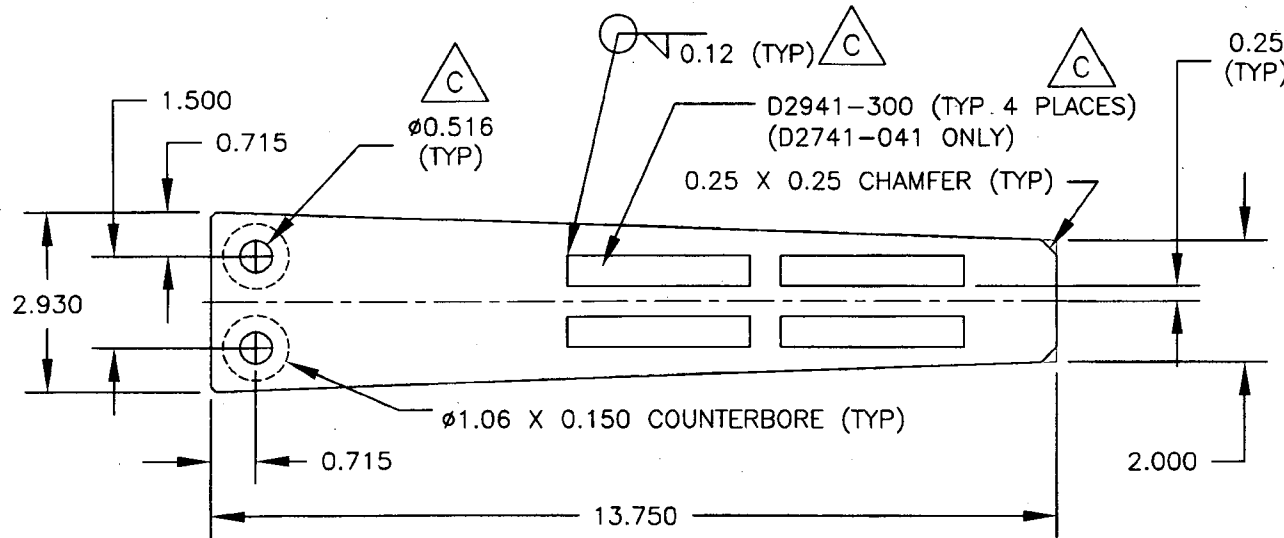
Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

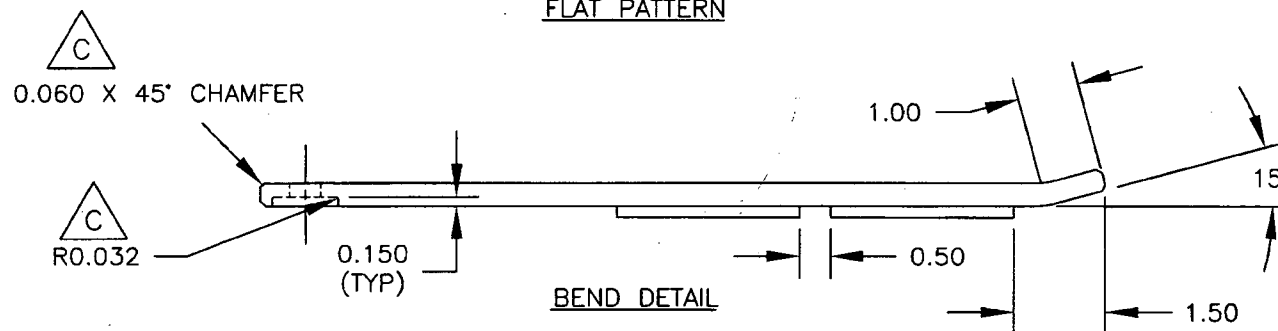
NOTE: Date & initial all entries

DART

RELEASED
06-02-07



FLAT PATTERN



BEND DETAIL

CL 11106113
WID: 70667

D2741 BLADE

- 1) MATERIAL: AISI 4130 STEEL 0.375 THICK
MIN. ULTIMATE TENSILE STRENGTH = 152 ksi (34-40 HRC)
MIN. YIELD TENSILE STRENGTH = 141 ksi
- 2) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3
- 3) ALL DIMENSIONS ARE IN INCHES
- 4) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 5) BREAK ALL SHARP EDGES 0.030 TO 0.060
- 6) TO MAKE D2741-041, WELD D2941-300 (4) AS SHOWN ABOVE.
REMOVE POWDER COAT FROM SURFACE OF D2941-300
- 7) TO MAKE D2741-043, WELD 7560 HARDCOAT ROD INSTEAD OF D2941-300

DESIGN	DRAWN BY	DART AEROSPACE USA, INC.
06.01.12	06.01.12	PORT HADLOCK, WA
CHECKED	APPROVED	DRAWING NO.
06.01.12	06.01.12	D2741
DATE	TITLE	REV. C
06.01.12	BLADE	SHEET 1 OF 1
A	98.04.16	NEW ISSUE
B	98.09.01	CHANGE C'SINK TO C'BORE
C	06.01.12	LARGER HOLE, ADD RADIUS AND CHAMFER ADD -041/-043 OPTIONS

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ
ST-EUSTACHE, QC J7R 5A8
Tel: 450-473-1884 / Fax: 450-491-5498

Recu de Livraison

Order	Shipper	Shipping Seq.
168385	1	53325

Shipped Complete

Customer **215**

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

Shipped To:

DART AEROSPACE
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
Ph: 613-632-5200
Fax: 613-632-1053

Purchase Order Number	Customer Shipper No.	Material Type	Order Date	Carrier
14598		4130	2011/8/1	FEDEX
Quantity	Part No. / Part Name / Part Description			Pounds
38	D2741 BLADE MATERIEL PER DWG D2741 REV. C B70667 1 PAL=2 B.C			139,

021108123

Container Type	# Of Containers	Container Comments
	1	1 PAL=2 B.C

CERTIFICAT REQUIS

PACKING	
----------------	--

Quantity Shipped: 38
Pounds Shipped: 139,00
Quantity Remaining: 0
Pounds Remaining: 0,00

CERTIFICAT REQUIS

Quantity Shipped: 38

Pounds Shipped: 139,00

Signature:

Date:

Shipped ON: 2011/08/19



F-000-19 REV.B

Metcor Inc.
560, boul. Arthur-Sauvé
St-Eustache (Québec) J7R 5A8
Tél.: (450) 473-1884
Fax Administration: (450) 491-5498
Fax Production: (450) 491-6454

Page 1 of 1

Certificat de Conformité
Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
168385	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K8A 1K7

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	CODE DE TRAITEMENT mat'l heat code	NUMÉRO DE LOT lot number
14598		4130		
SPÉCIFICATIONS DU PROCÉDÉ processing specifications SEL HARDEN HARDEN AND TEMPER SAE AMS 2759/1 REV.E J u l 2 2 / 2 4				
EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results	
HARDNESS	34 - 40 HRC	38	37 - 39 HRC	
TENSILE (KSI)	152 - 182 KSI		166 - 177 KSI	
QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description		
38	139	D2741 BLADE MATÉRIEL PER DWG D2741 REV. C B70667 1 PAL=2 B.C		

COMMENTAIRES / comments

INSPECTEUR / inspector:

DATE: 2011-08-19

**METCOR INC.**

560 BOUL. ARTHUR-SAUVÉ

ST-EUSTACHE, QC, J7R 5A8

Tel: 450-473-1884 / Fax: 450-491-5498

Certification

BON DE TRAVAIL order	CHARGEMENT load
168385	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	CODE DE TRAITEMENT mat'l heat code	NUMÉRO DE LOT lot number
14598		4130		

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

SEL HARDEN

HARDEN AND TEMPER

SAE AMS 2759/1 REV.E

EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	34 - 40 HRC	38	37 - 39 HRC
TENSILE (KSI)	152 - 182 KSI		166 - 177 KSI

QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
38	139	D2741 BLADE MATÉRIEL PER DWG D2741 REV. C B70667 1 PAL=2 B.C

Operation	Specified Temp	Specified Soak Time	Atmosphere	Carbon Potential	Q-Media Q-Temp	Furnace# Load #	Start Date	Time In	Time Out	Date Complete
1,00 CONT. INIT.	LAVAGE		si nécessaire							
2,00 PREPARINC	COMPTAGE									
3,00 PREHEAT 1	1000	1:00 1:30	air			610				
4,00 SEL HARDE	1575	0:40	SEL		BRINE	107				
5,00 WASH	150	0:30	soap							
6,00 SNAP TEMF	400	2:00	air			638				
7,00 SANDBLAS			Sablage							

**METCOR INC.**

560 BOUL. ARTHUR-SAUVÉ

ST-EUSTACHE, QC, J7R 5A8

Tel: 450-473-1884 / Fax: 450-491-5498

Certification

BON DE TRAVAIL order	CHARGEMENT load
168385	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

Operation	Specified Temp	Specified Soak Time	Atmosphere	Carbon Potential	Q-Media Q-Temp	Furnace# Load #	Start Date	Time In	Time Out	Date Complete
8,00 DIST INSP										
9,00 TEMPER	875 +/-10°F	4 hrs	air			635				
10,00 HARDN INS										
11,00 SANDBLAS			Sablage							
12,00 HUILAGE			huile							
13,00 FINAL INSP							08-19-2011			08-19-2011

COMMENTAIRES / comments

ALL THE HEAT TREATMENT PROCESSING PERFORMED ON THIS ORDER WAS ACCOMPLISHED USING HEAT TREATMENT EQUIPEMENT THAT MEETS THE REQUIREMENTS OF AMS 2750. ALL THE HEAT TREATMENT OPERATIONS WERE ACCOMPLISHED IN ACCORDANCE WITH THE REQUESTED/REQUIRED HEAT TREATMENT SPECIFICATION AND ALL REQUIRED VERIFICATIONS TEST HAVE BEEN PERFORMED AND DOCUMENTED. NO UNAUTHORIZED CHANGES OR DEVIATIONS TO REQUIRED HEAT TREATMENT SPECIFICATIONS OR PROCEDURES HAVE BEEN PERFORMED

APPROVED BY:

DATE: 2011-08-19

We certify that all the information on this report is exact and in accordance with the order requirements. / Nous certifions que toute l'information comprise sur ce rapport est exacte et conforme aux requis du client.

